



Claim 5. (Currently amended) A synthesis method of an organometallic compound comprising:

obtaining a crude product of an organometallic compound by using a metal-containing compound and aminolithium;

distilling said crude product under reduced pressure in a vacuum distillation step to obtain a purified product of said organometallic compound; and,

~~removing~~ removing impurities contained in the purified product in an impurity removal step using flash chromatography following said vacuum distillation step.

Claim 6. (Original) A synthesis method according to claim 5, wherein said impurity removal step comprises:

forming a filler layer inside a pressure-resistant column by filling into said column a slurry prepared by adding a filler to a developing solvent;

injecting said purified product into a top of the filler layer; and,

passing said purified product through the filler layer by supplying a pressurized gas at a predetermined flow rate into the column from a top of the column to adsorb impurities contained in said purified product in the filler layer.

Claim 7. (Original) A synthesis method according to claim 5, wherein said impurities removed from the purified product are chlorine and water.



Claim 14. (Original) A synthesis method according to claim 6, wherein the pressurized gas is Ar gas, a pressure of the pressurized gas is 1-2 kg, and a column flow rate has a spatial velocity (SV value) of 2-4 cm/min.

Claim 15. (Original) A synthesis method according to claim 5, wherein said metal-containing compound is hafnium chloride, zirconium chloride, tantalum chloride, titanium chloride, cerium chloride, vanadium chloride, lanthanum chloride, niobium chloride, nickel chloride or silane tetrachloride.

Claim 16. (Original) A synthesis method according to claim 5, wherein said aminolithium is obtained by reacting one of dimethylamine and diethylamine with n-butyllithium.

Claim 17. (Original) A synthesis method according to claim 5, wherein when said metal-containing compound is hafnium chloride, the resulting organometallic compound is one of tetraquis(dimethylamino)hafnium and tetraquis(diethylamino)hafnium.

Claim 18. (Original) A synthesis method according to claim 15, wherein when said metal-containing compound is hafnium chloride, the resulting organometallic compound is one of tetraquis(dimethylamino)hafnium and tetraquis(diethylamino)hafnium.

Claim 19. (Original) A synthesis method according to claim 5, wherein when the metal-containing compound is silane tetrachloride, the resulting organometallic compound is one of tetraquis(dimethylamino)silane and tetraquis(diethylamino)silane.

Claim 20. (Original) A synthesis method according to claim 15, wherein when the metal-containing compound is silane tetrachloride, the resulting organometallic compound is one of tetraquis(dimethylamino)silane and tetraquis(diethylamino)silane.

Claims 21-22. (Canceled)

Claim 23. (Original) A solution raw material containing an organometallic compound according to claim 3 dissolved in an organic solvent.

Claim 24. (Original) A solution raw material comprising an organometallic compound according to claim 4 dissolved in an organic solvent.

Claim 25. (Original) A solution raw material comprising an organometallic compound obtained by a synthesis method according to claim 5 dissolved in an organic solvent.

Claim 26. (Original) A solution raw material comprising an organometallic compound obtained by a synthesis method according to claim 6 dissolved in an organic solvent.

Claims 27-28. (Canceled)

Claim 29. (Original) A solution raw material according to claim 23, wherein said organic solvent is at least one type of compound selected from the group consisting of n-alkane, tetrahydrofuran, cyclohexane, cycloalkane and branched alkane.

Claim 30. (Original) A solution raw material according to claim 24, wherein said organic solvent is at least one type of compound selected from the group consisting of n-alkane, tetrahydrofuran, cyclohexane, cycloalkane and branched alkane.

Claim 31. (Original) A solution raw material according to claim 25, wherein said organic solvent is at least one type of compound selected from the group consisting of n-alkane, tetrahydrofuran, cyclohexane, cycloalkane and branched alkane.

Claim 32. (Original) A solution raw material according to claim 26, wherein said organic solvent is at least one type of compound selected from the group consisting of n-alkane, tetrahydrofuran, cyclohexane, cycloalkane and branched alkane.

Claims 33-34. (Canceled)

Claim 35. (Original) A metal-containing thin film produced by metal organic chemical vapor deposition using an organometallic compound according to claim 3.

Claim 36. (Original) A metal-containing thin film produced by metal organic chemical vapor deposition using an organometallic compound obtained by a synthesis method according to claim 5.

Claim 37. (Currently amended) A metal-containing thin film produced by metal organic chemical vapor deposition using an organometallic compound obtained by a synthesis method according to claim 6.

Claims 38-39. (Canceled)

Claim 40. (Original) A metal-containing thin film produced by metal organic chemical vapor deposition using a solution raw material according to claim 23.

Claim 41. (Original) A metal-containing thin film produced by metal organic chemical vapor deposition using a solution raw material according to claim 24.

Claim 42. (Original) A metal-containing thin film produced by metal organic chemical vapor deposition using a solution raw material according to claim 25.

Claim 43. (Original) A metal-containing thin film produced by metal organic chemical vapor deposition using a solution raw material according to claim 26.